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| 13. ABSTRACT (Maximum 200 words) <p>THIS IS A PROGRESS REPORT ON AEROJET'S STUDIES OF EXPERIMENTS CURRENTLY UNDERWAY (E.G., PLANT GROWTH AND DIMP AND DCPD LYSIMETER TESTS). THE SIGNIFICANT CHANGES BEING CONSIDERED FOR THE TEST PLAN ARE AN INCREASE IN THE NUMBER OF TEST SPECIES FROM SEVEN TO TEN AND THE ADDITION OF RADIO TRACER TECHNIQUES TO THE INITIAL RANGE FINDING EXPERIMENTS. THE INDIVIDUAL TUB APPARATUS FOR THE RANGE FINDING EXPERIMENTS HAS BEEN SET UP AND IS BEING TESTED WITH IMMATURE JUNIPER AND ROSE PLANTS. ALL SYSTEMS ARE OPERABLE AND THE TEST PLANTS SEEM TO BE THRIVING. DISTILLED WATER HAS BEEN SELECTED AS THE MEDIUM OF CHOICE FOR USE IN THE EXPERIMENTAL PROGRAM. SHIPMENTS OF BOTH DIMP AND DCPD HAVE BEEN RECEIVED.</p> <p style="text-align: center;">DTIC QUALITY INSPECTED 3</p> | | | | |
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DETERMINATION OF DECONTAMINATION CRITERIA

FOR

DIMP AND DCPD (U)

Report No. 1953-01(02)MP

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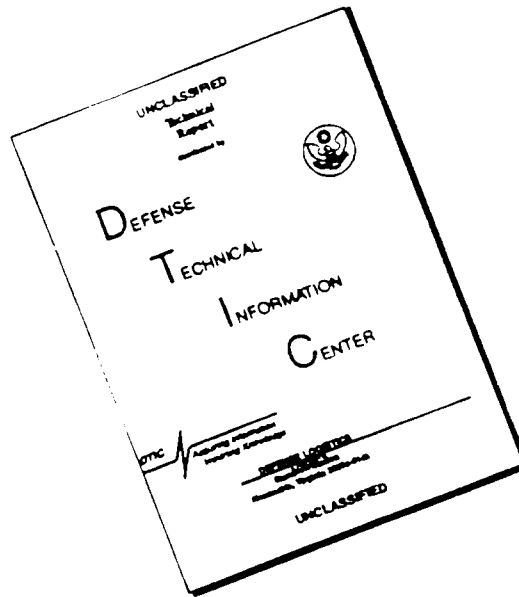
P. A. O'Donovan
P. A. O'Donovan

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Progress on the items proposed for action during August 1975, is discussed in the following paragraphs.

A. Analysis of Chino Hills Water Supply

The well water which is normally supplied to the laboratory area has been analyzed to determine its suitability as an irrigation medium.

The pertinent portions of the report are shown in Table I.

Additional considerations, including closer control of water quality, have led to the selection of distilled water as the medium of choice for use in the experimental program.

B. Test Plan Preparation

A preliminary test plan has been submitted by AOMC to the sponsor for approval and/or modification. This plan is currently undergoing modification. The significant changes being considered for the test plan are an increase in the number of test species from seven to ten and the addition of radio tracer techniques to the initial range finding experiments.

C. Range Finding Experiments

The individual tub apparatus for the range finding experiments has been set up and is being tested with immature juniper and rose plants. All systems are operable and the plants seem to be thriving. Germination trays have been set up and the fescue, wheat, and corn have been successfully germinated. Radish, bean, tomato, carrot and sugar beet seeds have been obtained and germination tests are underway. The sugar beet seeds were obtained from the Elmore Company of Brawley, California. All the other seeds were commercially available locally.

TABLE I

Analysis of Chino Hills Well Water - 8-4-75

Measured:

| | | |
|--|--------|-----|
| Specific Conductance μ mho/cm @ 25°C | 1386 | |
| pH | 7.60 | |
| SiO ₂ | 21.7 | ppm |
| Ca | 58.4 | " |
| Mg | 25.0 | " |
| Na | 180.8 | " |
| K | 10.0 | " |
| CO ₃ ⁼ | 0 | " |
| HCO ₃ ⁻ | 475.8 | " |
| SO ₄ ⁼ | 180.7 | " |
| Cl ⁻ | 48.0 | " |
| NO ₃ ⁻ | 16.8 | " |
| Fe | < 0.02 | " |
| Cu | < 0.02 | " |
| B | 0.05 | " |

Calculated:

| | | |
|--------------------|--------|-----|
| Total Alkalinity | 390 | ppm |
| Total Solids | 995.5 | " |
| Total Hardness | 249 | " |
| Temporary Hardness | 249 | " |
| Corrosion Index | + 0.43 | |

D. Chemical and Analytical Preparation

Shipments of both DIMP and DCPD have been received. Analysis by gas-liquid chromatography (GLC) using a thermal conductivity detector indicate that the DCPD is in excess of 96% pure. A chromatogram of this material can be seen in Figure 1. The DIMP has been analyzed also by GLC. There is some inconsistency in the analysis, however, and it is being repeated. A typical chromatogram of this DIMP, run undiluted, is shown in Fig. 2. Consultation is underway with the vendor to assist in establishing the characteristics of the material.

The alkaline flame ionization phosphorus detector (AFID) and flame ionization detector (FID) have also been utilized to obtain base line data chromatograms on the two materials.

Sufficient chemicals to prepare nutrient baths for the large scale hydroponic experiments have been ordered.

E. Lysimeter Preparation

Twenty 55-gallon drums have been obtained. These were converted to ten lysimeter bodies of 69 inches in height by attaching one drum to the top of another and removing all but the bottom drum end. Threaded drain holes are provided in the bottom of each lysimeter. A stand has been constructed to hold the apparatus approximately 12 inches above the ground for access to the drain hole.

F. Laboratory Soil Tests

The laboratory apparatus has been constructed for the preliminary soil/agent exposure tests outlined in the test plan. Local top soil from a remote area of the Chino Hills facility of AOMC has been obtained and prepared (sieved and dried) for use in this apparatus.

DATE 8-28-75 SAMPLE # 2

INST. GC-2 ANALYST POD

STARTING TEMP. 110°C MAX. TEMP 110°C

PROGRAM RATE - FLOW RATE 20 PSI

BRIDGE CURRENT ²⁰⁰ma SAMPLE VOL. ^{0.7}2

INJECTION PORT Max. BLOCK 220°C

COLUMN SE-52 3.2% on ChromoG-DCMS ^{60/80}

SAMPLE Dicyclopentadiene MCB

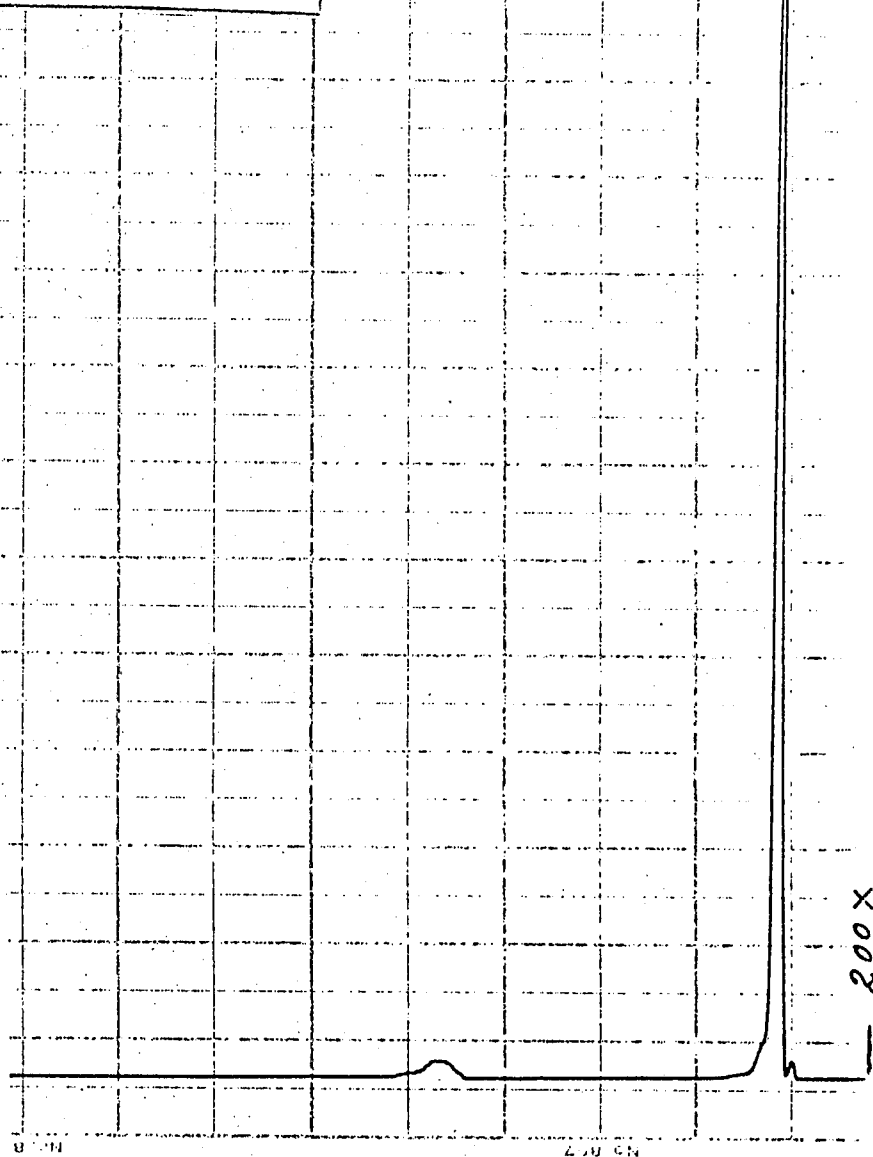


Figure 1.

DATE 5-28-73 SAMPLE # 1
INST. GC-2 ANALYST POD
STARTING TEMP. 110°C MAX. TEMP 110°C
PROGRAM RATE — FLOW RATE 20 PSI
BRIDGE CURRENT ²⁰⁰ mA SAMPLE VOL. ^{0.5} ₂
INJECTION PORT MAX. BLOCK 220°C
COLUMN SE-52 3.2% ON CHROMO-G-DMS 60/80
SAMPLE DIMP LOT ZX3 IN GLASS

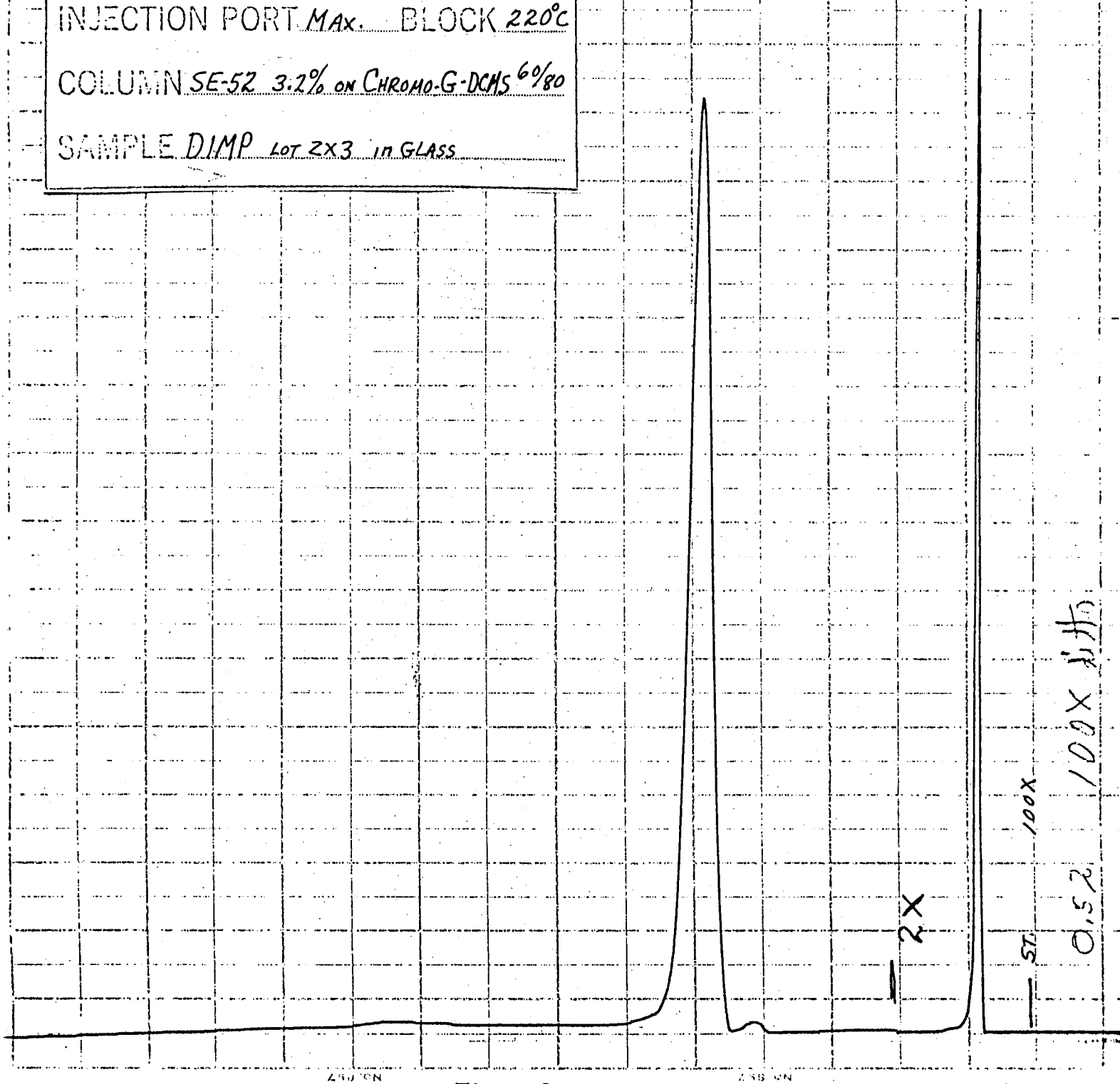


Figure 2.

Proposed Activity During September 1975

During the coming month the following activities will be pursued:

- o Resolution of the inconsistencies in the DIMP purity analysis.
- o Location of a source for radioactive DIMP and DCPD.
- o Inoculation of laboratory scale soil/agent compatability tests with DIMP and DCPD and initial measurements thereon.
- o Make preparations for radioactive tracer measurements in plant materials.
- o Complete germination tests of all seeds to be used in plant growth experiments.
- o Initiate plant growth experiments depending on proper agent material availability.
- o Complete construction of lysimeter apparatus and finalize lysimeter test plan.